IN THE CLAIMS:

Clean Version of the Amended Claims:

1. A method of growing a Gallium Nitride on a silicon substrate, including the following steps:
   (a) providing a silicon substrate,
   (b) removing the oxide layer on said silicon substrate,
   (c) growing a buffer layer of a Silicon Carbon Nitride by supplying a gas mixture of H_2, SiH_4, NH_3, and C_3H_8 to a reactor maintaining at a specified growing pressure and temperature, during a specified length of growing time,
   (d) growing a Gallium Nitride film upon the said buffer layer of said Silicon Carbon Nitride by providing source materials into a reactor maintaining at a specified temperature and pressure, with a specified rotating speed of said substrate.
2. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein the said silicon substrate is oriented in <100> or <111> direction.
3. The method of growing a Gallium Nitride on a silicon substrate according to claim1, wherein said silicon substrate is of either p-type or n-type, with a specific resistivity of any value.
4. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (b), said oxide layer on said

silicon substrate is removed by a Rapid Thermal Chemical Vapor Deposition system.

5. The method of growing a Gallium Nitride on a silicon substrate according to claim1, wherein, in said step (b), said oxide layer on said silicon substrate is removed by a Chemical Vapor Deposition system.
6. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein said C_3H_8 gas is substituted by CH_4, C_2H_4, or $SiCH_6$ gas.
7. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein said NH_3 gas is substituted by N_2.
8. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein the flow rate of said H_2, SiH_4, NH_3, or C_3H_8 gas depends on size of said reactor and gas pipe design of said gases.
9. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step(c), said growing pressure ranges from 0.1mTorr to 40Torr.
10. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (c), said growing temperature ranges from 750°C, to 1500°C.
11. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein the chemical composition of said buffer layer of said Silicon Carbon Nitride ranges as: Si (1-x-y): 35-65 at.% , C (x) 0.1-25 at.% , N (y) 30-60 at.% .
12. The method of growing a Gallium Nitride on a silicon substrate

according to claim 1, wherein, in said step (c), the thickness of said buffer layer of said Silicon Carbon Nitride increases with said growing time.

13. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (c), said buffer layer of said Silicon Carbon Nitride is grown by a Rapid Thermal Chemical Vapor Deposition system.

14. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step(c), said buffer layer of said Silicon Carbon Nitride is grown by a Chemical Vapor Deposition system.

15. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (d), said specified temperature ranges from 400°C to 1200°C.

16. The method of growing a Gallium Nitride on a silicon substrate according to claim1, wherein, in said step (d), said specified pressure ranges from 50Torr to 700Torr.

17. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (d), said specified rotating speed of said substrate ranges from 10 rpm to 1000 rpm.

18. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein, in said step (d), a Metalorganic Chemical Vapor Deposition is used to grow a Gallium Nitride buffer layer in thickness of 100Å to 700Å at a lower temperature, and then to grow said Gallium Nitride film in thickness of 0.3μm to 5.5μm at a higher temperature.

19. The method of growing a Gallium Nitride on a silicon substrate according to claim 18, wherein, said lower temperature ranges from 400°C to 800°C, and said higher temperature ranges from 900°C to 1200°C, and both said Gallium Nitride buffer layer and said Gallium Nitride film are grown at a pressure ranging from 50Torr to 700Torr.

20. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, wherein said source materials include: N_2, H_2, SiH_4, NH_3, TMGa (TrimethylGallium), TEGa (TriethylGallium), TMAl (TrimethylAlluminium), TMIn(TrimethylIndium), and CP_2Mg (CycloPentadienyl Magnesium).

21. The method of growing a Gallium Nitride on a silicon substrate according to claim 1, whereby a multiple-layered structure of Gallium Nitride/Silicon Carbon Nitride/Silicon substrate is fabricated.